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FACILITIES AND SPACE ALLOCATIONS FOR PHYSICAL EDUCATION OUTDOOR TEACHING STATIONS FOR ELEMENTARY AND INTERMEDIATE PUBLIC SCHOOLS.

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THE PURPOSE OF THIS BULLETIN IS TO PRESENT RECOMMENDATIONS FOR MINIMUM OUTDOOR FACILITIES AND SPACE ALLOCATIONS FOR A BALANCED PHYSICAL EDUCATION PROGRAM FOR GRADES K-8 IN PUBLIC SCHOOLS. IN THE BULLETIN ONLY SPACE REQUIREMENTS FOR PHYSICAL EDUCATION TEACHING STATIONS ARE DESCRIBED. INCLUDED IN THE BULLETIN ARE RECOMMENDATIONS FOR SITE PLANNING AND SPACE ARRANGEMENTS AS THEY ARE RELATED TO GRADE LEVEL, TYPES OF SURFACING AND PUPIL-SPACE RATIOS. SUGGESTIONS ARE MADE FOR APPARATUS AND GAME AREA SPACE ALLOCATIONS. ALSO INCLUDED ARE CHARTS, DIAGRAMS AND MATRICES PERTAINING TO THE K-8 PHYSICAL EDUCATION PROGRAM. (GM)

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Facilities and Space Allocations for Physical Education Outdoor Teaching Stations for Elementary and Intermediate Public Schools

(Bulletin 40, 1967 Edition)

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Facilities and Space Allocations for Physical Education Outdoor Teaching Stations for Elementary and Intermediate Public Schools

(Bulletin 40, 1967 Edition)

Prepared by

**Bureau of Health Education,
Physical Education and Recreation
and
Bureau of School Planning**

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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PREFACE

The facilities and space allocations described in this pamphlet, first issued in September, 1960, as "Bulletin 40, Revised," were developed by representatives of four interested groups: the School Building Committee of the California Association for School Administrators; the Local Allocations Division of the California State Department of Finance; and the two bureaus of Health Education, Physical Education and Recreation and of School Planning, California State Department of Education. A study, made over a three-year period, included observation of schools of different types, of several sizes, and with a variety of schedules. The objective was to determine the minimum facilities and space allocations for outdoor physical education and recreation that were needed to (1) give each child ample participation, with maximum safety, and (2) gain maximum use of each facility and space allocation.

The bulletin has been used since its first publication by countless school planners, and the demand for copies has persisted. The present revision has few changes, which testifies to the thoroughness of the work done by the original committee.

The original publication was developed by Genevie Dexter, Consultant in Physical Education, and by Doyt Early, Senior Architect, California State Department of Education. Doyt Early retired from the Department on July 1, 1960, and Edward C. Gustafson, Assistant Architect, made the drawings for the charts, diagrams, and tables. Many school teachers, supervisors, principals, and superintendents assisted with the preparation of the material. Among those giving special help, and their positions at the time the publication was developed, were Eric Pearson, Curriculum Coordinator, Health Education, Physical Education and Recreation, Office of the San Diego County Superintendent of Schools; Glenn E. Murdock, Superintendent of La-Mesa Spring Valley Elementary School District; Paul B. Salmon, Superintendent of Covina Elementary School District; Francis C. Darby, Assistant Superintendent, Office of the San Diego County Superintendent of Schools; and Rod Overton, Facilities Specialist, Oakland.

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INTRODUCTION

Purposes of Recommendations

The purpose of this bulletin is to present recommendations for minimum outdoor facilities and space allocations needed for physical education teaching stations for elementary and intermediate (grades seven and eight) public schools. The materials presented should be helpful to school officials, architects, and planning consultants in determining the facilities and space allocations essential to site development of schools for children in kindergarten through grade eight.

The space allocations and facilities that are suggested are not intended to be set forth as standard lists of spaces, equipment, and apparatus but as guides to the development of adequate outdoor teaching stations for the physical education programs that are necessary to meet the legal requirements set forth by the California legislature.

In this bulletin only the space requirement for teaching stations for physical education is presented. No reference has been made to the space requirements for buildings, setbacks, landscapes, and needs for other areas of instruction. [1]

In addition to the outdoor teaching stations and the needs for buildings and landscaping, other factors related to facilities and space for physical education must be considered in selecting a site of adequate size for an elementary or intermediate school. These factors are (1) the effect of irregular-shaped areas on site size; (2) the effect of various scheduling practices in relation to the amount of land necessary for various school programs; and (3) the land requirements for full-scale school and community recreational programs, an expanded usage which may amount to an additional adjacent seven to ten acres.

The recommended facilities, space arrangements, and types of surfacing presented in the charts, diagrams, and tables in this bulletin refer to outdoor teaching stations only; no provision is made for indoor teaching stations or for aquatic facilities.

Legal Requirements

Legal provision for instruction in physical education and supervision of play activities in California public schools is expressed in sections of the Education Code and the California Administrative Code, Title 5, Education. Sections particularly applicable are the following:

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[1] See School Site Analysis and Development, Prepared by Bureau of School Planning. Sacramento: California State Department of Education, 1966.

Education Code

8151. Attention shall be given to such physical exercises for the pupils as may be conducive to health and to vigor of body, as well as mind . . . .

8156. The board of education of each county, city and county, and city, whose duty it is to prescribe the course of study for the elementary schools of the county, city and county, or city, shall prescribe suitable courses of physical education for all pupils enrolled in the day elementary schools, except pupils who may be excused in accordance with the provisions of Sections 8152 to 8164, inclusive.

8158. The superintendent of schools of every county, city and county, or city, and the governing board of every school district shall enforce the courses of physical education prescribed by the proper authority, and require that such physical education be given in the day schools under their jurisdiction or control.

8159. All pupils enrolled in the elementary schools, except pupils excused, shall be required to attend upon the courses of physical education for an instructional period in each school day which shall be not less than 20 minutes, exlusive of recesses and the lunch period.

Administrative Code, Title 5

18. Playground Supervision. Where playground supervision is not otherwise provided, the principal of each school shall provide for the supervision, by teachers, of the conduct and direction of the play of the pupils of the school or on the school grounds during recesses and other intermissions and before and after school. All athletic or social activities, wherever held, when conducted under the name or auspices of any public school, or of any class or organization thereof, shall be under the direct supervision of the authorities of the district.

21. May Not Be Kept in During Recess. No pupil shall be required to remain in school during the intermission at noon, or during any recess. All pupils shall be required to pass out of the school rooms at recess, unless it would occasion an exposure of health.

Need for Site Planning

Careful planning for properly arranged space and adequate facilities is a necessary prerequisite to the conduct of well-balanced physical education and school recreation programs. When a school site is being laid out, consideration must be given to the fact that the teaching stations designed for physical education will be used for instruction during the school day and for supervised play activities before school, at noon, and after school. Consequently, peak loads for use of space and facilities must be calculated for

both instruction and supervised play. To ensure the best use of the site and make provision for adequate space and facilities, questions such as the following should be answered:

1. What are the expected outcomes for each child using the space and facilities allocated for physical education? For example, what skills should be acquired by each child? What activities for leisure should be learned? What physical development should be expected?[1]

2. What activities will provide the expected outcomes? For example, what variety of activity is necessary? What special facilities are required?

3. Out of the total physical education teaching time, what portion of the time should be given to each activity? What activities should be emphasized for each age group? Has it been verified, through consultation of accepted authorities, that the proposed activities are appropriate and are in proportion to the total program?

4. What is the estimated maximum number of children who will use the site during physical education instruction periods? And what is the estimated maximum number who may use the site for supervised play before school, at noon, and after school?

5. How much space is needed for safe passageways? What are the traffic patterns? Where are the "buffer zones"? Where are the informal assembly areas?

Charts, Diagrams, and Tables

The charts, diagrams, and tables that are presented in this bulletin should facilitate the planning of outdoor teaching and play areas in the school. The text that follows is essentially a supplement to the graphic material.

SCHEDULING PHYSICAL EDUCATION

In the process of planning outdoor facilities for physical education in a particular school, one of the first decisions to be made is the number of periods of instruction that are to be scheduled each day for physical education.

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[1]See Winifred Van Hagen, Genevie Dexter, and Jesse F. Williams, Physical Education in the Elementary School. Sacramento: California State Department of Education, 1951. See also Criteria for Evaluating the Physical Education Program, Kindergarten and Grades One Through Six; and Criteria for Evaluating the Physical Education Program, Grades Seven, Eight, and Nine. Sacramento: California State Department of Education, 1960. These two pamphlets are available from the Bureau of Health Education, Physical Education and Recreation.

Provision for each age group that is assigned an outdoor teaching station is based on the premise that one class is taught by one teacher at one time, with no pupil having to wait a turn because of lack of space and facilities. Variables to be taken into consideration in scheduling are the size and grade composition of the school, the length of the school day, the schedule for noon, recess, and recreation periods, the length of the instructional period, and whether or not there are dressing facilities. In large schools, the lunch period may be staggered. Scheduling physical education for the first period in the morning and the first period in the afternoon is inadvisable. If there are dressing facilities, extra time must be allowed for showering and/or dressing. The minimum instructional time in an elementary school, 20 minutes, may be combined with the 5 or 10-minute recess to permit scheduling a 25 or 30-minute class.

Elementary schools may include kindergarten and grades one through eight or kindergarten and grades one through six, with grades seven and eight or grades six, seven, and eight housed separately. The number of pupils in the school for each grade is a factor in determining how many classes will be scheduled at the same time. This number varies from school to school, depending on such factors as age of the residential area from which the school population is drawn, the economic level of the residents, and the growth rate of the district. Before planning begins for physical education space and facilities, therefore, an analysis should be made of the probable composition of the school. As an example, Table 1 shows the number of pupils and the number of classrooms in two average 500-pupil elementary schools, one (A) having kindergarten through grade six and another (B) having kindergarten through grade eight.

TABLE 1

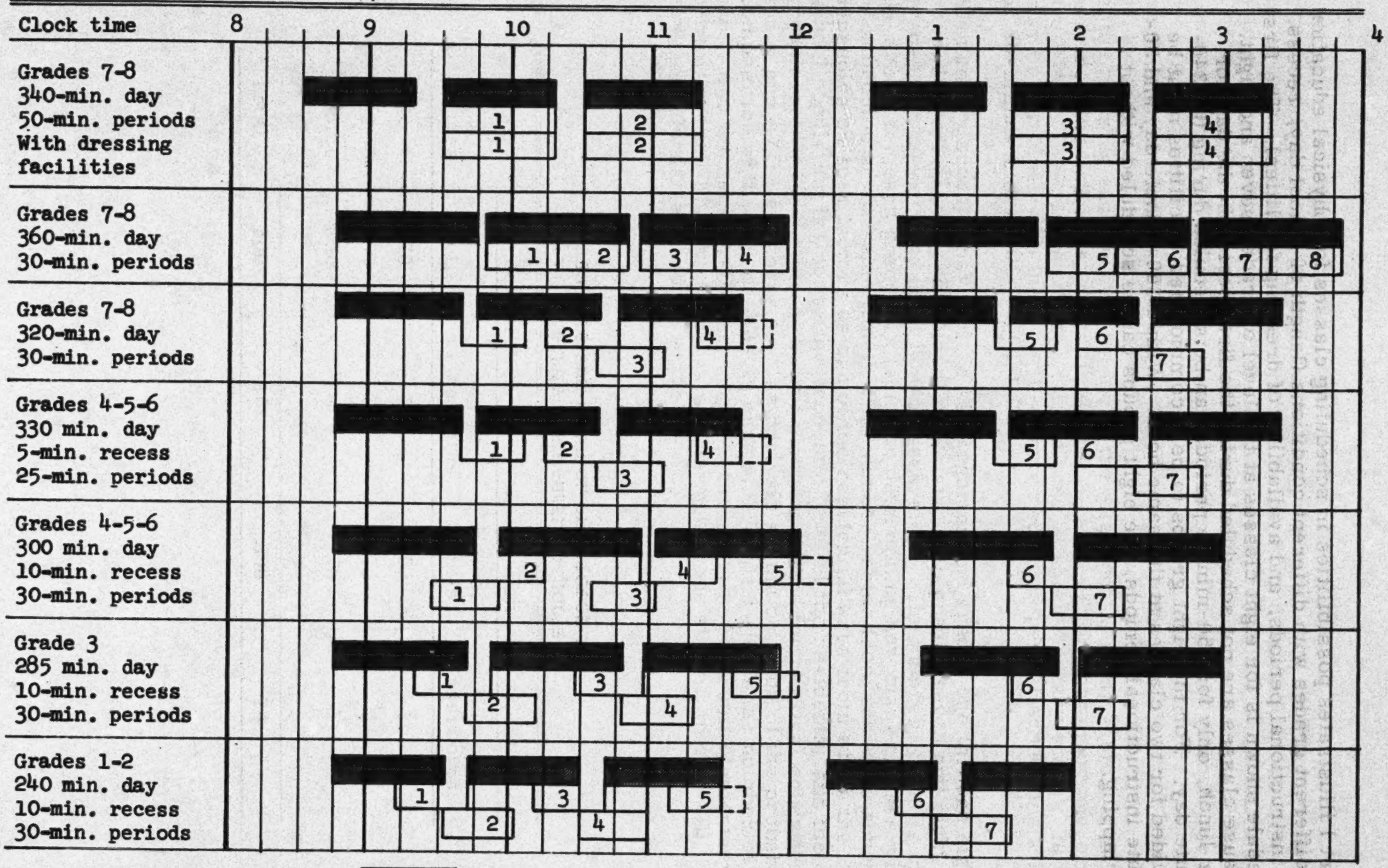
Class Size and Number of Classes in Two Average Elementary Schools

Grades	School A (K-6)		School B (K-8)	
	No. of pupils	No. of classrooms	No. of pupils	No. of classrooms
K	70	2	55	1
1, 2, 3	230	7	175	5
4, 5, 6	200	6	176	5
7, 8			94	3
Total	500	15	500	14

Chart I illustrates possibilities in scheduling classes for physical education for different grades with different conditions (length of school day, recess, and instructional periods, and availability of dressing facilities). The first schedule shown is for eight classes at the level of grades seven and eight. Because classes are not scheduled during the first period in the day nor after lunch, only four 50-minute periods can be scheduled during the 340-minute day. For the eight groups to be accommodated, facilities must be provided for two classes at the same hour. With a 360-minute day and 30-minute instructional periods, the eight groups can be scheduled without overlapping.

CHART I

Possibilities in Scheduling Classes for Physical Education



Clock hours are shaded areas

The break between the shaded areas represents recess or supervised play

The outlined block below the shaded areas represents the physical education period

OUTDOOR FACILITIES AND SPACE REQUIREMENTS

Three different types of outdoor facilities must be designed for each age group if a well-balanced program is to be provided for a child as he progresses through the grades. The types of outdoor facilities needed for each age group are (1) apparatus area; (2) hard-surfaced area; and (3) turf and dirt area. The amount of space needed for each of the three areas is tabulated separately in tables 2, 3, 4, and 5 for four different age groups: kindergarten; grades one, two, and three; grades four, five, and six; and grades seven and eight.

When facilities are planned, the number of pupils in each grade must be estimated as closely as knowledge of growth factors will permit. Thus, the master site plan can be developed to accommodate future growth with the least amount of disturbance of initial construction and usage. Installation of multiple-use or separate play areas should be determined by the estimated size of the school. The degree of multiple use possible on any type of area, turf or hard-surfaced, depends upon the number of children that must be scheduled at any one time for the various activities that make up a well-balanced physical education and recreational program. For example, if a court space is to be scheduled for every period of every day during the school year, separate court space must be provided for other activities and groups.

The total number of pupils in a school should be considered to determine the number of periods needed for instruction and for recreation activities when more than one group will be using the same type of space or facility simultaneously. In schools with total enrollment of 300 or more, the facilities and play space should be planned and installed separately for each age group. In schools with enrollments of less than 300, the multiple-use play areas, both hard-surfaced and grass and dirt areas, should be placed conveniently near to the classrooms of the pupils who are to use the areas. The apparatus should be installed in separate areas for different groups, since it is safer when children use only the appropriate equipment.

Kindergarten

Table 2 shows the outdoor facilities needed for physical education for schools with one or two kindergartens. Almost all schools in California housing the first six grades have at least one kindergarten. Kindergartens are built also in conjunction with schools housing all eight grades. Very seldom are more than two kindergartens built on one site. Space and facilities provided for children in the kindergarten should be so constructed and installed that they are readily adaptable and are conducive to informal individual and small group activity throughout the school day.

TABLE 2

Outdoor Facilities for Physical Education for the Kindergarten

Area and use	Dimensions of fixture	Area needed for safe use	Number of square feet needed	
			1 classroom double session	2 classrooms 55-110 pupils
APPARATUS				
To be installed over rubber matting on hard surface, or sand and pine shavings, or sand and rubber cuttings				
Balance board	4" x 12'	4' x 18'	72	72
Benches (2)	1-1/2' x 6'	6' x 10'	60	60
Climbing structure	7' x 7'	20' x 20'	400	400
Low turning bar 3' high	1-1/2' x 10'	12' x 20'	240	240
Monkey rings	2' x 12'	10' x 24'	240	240
Sculptured play equipment	6' x 10'	15' x 20'	300	600
Slide 6' with safety platform	2' x 12'	6' x 23'	138	138
Swings, set of 3 with canvas seats	8' x 15'	16' x 23'	368	368
Access and circulation			432	432
Total apparatus area			2,250	2,550
HARD SURFACED AREA				
To be used for wheeled toys, building blocks, games played on circles and squares, ball bouncing			2,000	4,000
GRASS AND DIRT AREA				
To be used for stunts and running and jumping games; permits also use of tree stumps, boats, boxes, platforms, building blocks				
Digging area		10' x 20'	200	400
Live pet area		10' x 20'	200	200
Running and jumping game area			3,000	6,000
Sand box	8' x 20'	16' x 28'	448	896
Total grass and dirt area			3,848	7,496
TOTAL AREA FOR KINDERGARTEN (square feet)			8,098	14,046
(acres)			.19	.32

Grades One, Two, and Three

Table 3 shows the separate and specific type of outdoor facilities for physical education for grades one, two, and three. Facilities and space allocations are listed for schools with a total enrollment of fewer than 100 pupils, and for schools with a varying number of pupils in grades one, two, and three: (1) below 100; (2) from 101 to 145; (3) from 146 to 240; (4) from 241 to 315. Children in these grades need facilities that provide for a single child, couples, and small and large groups to participate in varied activities under the informal but continuous supervision of a teacher. Many of these activities should involve the large muscles of the body. The fundamental skills necessary for coordinated body movement must be taught in the primary grades. Skills necessary for games, rhythms, and stunts are to be acquired as the children mature, and acquiring them depends on these fundamental skills.

Multiple-use areas in small schools (under 300). For schools in which, because of location or other circumstances, the eventual total enrollment is not expected to exceed 300 pupils, provision for multiple-use areas is both economically and educationally sound. Diagram A shows an economically installed multiple-use hard-surfaced area for grades one through eight instead of the more flexible separate play areas as recommended for schools with over 300 pupils. The area labeled "Grades 1-2-3" in Diagram A and outlined by a broken line is designed for the youngest children. On this area can be placed the following: two circle games in 40-foot squares (A); two tetherball courts (B); two foursquare courts (C); three handball and target areas (D); and four hopscotch areas (E). When the children in the primary grades are not using this area, it is available for other children.

Multiple-use areas in schools with less than 100 pupils. For schools with four rooms or less, where it is not expected that the school will exceed a total enrollment of 100, the minimum hard-surfaced area should provide the following: (1) a space 70 x 100 feet for basketball, hopscotch, and other circle games; (2) three handball and target courts; (3) two tetherball circles; and (4) an open area for circle games. The specific dimensions for these courts are as follows: basketball, 40 x 60 feet, with goals 8 feet high; handball and target areas, 16 x 32 feet, with backboards 8 feet high; and tetherball courts, 20 x 20 feet. In this minimum space all pupils, even those in grades seven and eight, have only small basketball courts. In addition, very careful scheduling is necessary to provide appropriate facilities for each age group and prevent crowding of teaching stations.

Grades Four, Five, and Six

Table 4 shows the separate and specific type of outdoor facilities needed for physical education for grades four, five, and six. Outdoor facilities are shown for schools with a total enrollment below 100 pupils; and for schools with a varying number of pupils in grades four, five, and six: (1) less than 100; (2) from 101 to 145; (3) from 146 to 240; and (4) from 241 to 315. Children in these grades require different types of games than those played in the primary

TABLE 3

Outdoor Facilities for Physical Education for Grades One, Two, and Three

Area and use	Dimensions of facility	Area needed for safe use	Total number of square feet needed for school of				
			Less than 100 pupils total	Less than 100 pupils in gr. 1-2-3	Up to 145 pupils in gr. 1-2-3	Up to 240 pupils in gr. 1-2-3	Up to 315 pupils in gr.1-2-3
APPARATUS							
To be installed over rubber matting on hard surface, or sand and pine shavings, or sand and rubber shavings							
Balance board	4" x 12'	4' x 18'	72	72	72	72	72
Benches	1-1/2' x 6'	6' x 10'	120	60	60	60	60
Climbing structure	8' x 8'	22' x 22'	484	484	484	484	484
Horizontal bars 4' x 5' high	2" x 10'	10' x 14'	140	--	140	140	140
Monkey rings 7' high	2' x 15'	10' x 24'	240	--	240	240	480
Sculptured play equipment	10' x 12'	18' x 20'	--	360	360	720	720
Slide, 8' with safety platform	2' x 16'	10' x 28'	--	--	280	280	280
Swings, set of 3 with canvas seats	8' x 15'	20' x 24'	--	--	--	--	480
Turning bar 3-1/2' high	1-7/8" x 10'	10' x 18'	180	180	180	180	180
Access and circulation			150	200	200	300	300
Total apparatus area			1,386	1,356	2,016	2,476	3,196
HARD-SURFACED AREA							
Circle game area 30' diameter, with 1', 3', 6', 12', 20', 30' circles	30' x 30'	40' x 40'	See	*	3,200	3,200	6,400
Foursquare and hopscotch	20' x 20'	25' x 30'	Diagram	1,500	1,500	2,250	2,250
Lines area	25' x 50'		A	*See Diag. A	*	1,250	1,250
Multiple-use rectangles	40' x 40'			3,200	3,200	3,200	6,400
Targets on wall 8' high	16' x 30'	16' x 36'		1,152	1,152	1,152	1,152
Tetherball courts	20' x 20'	22' x 22'		968	968	1,936	1,936
Total hard-surfaced area				6,820	10,020	12,988	19,388
TURF AND DIRT AREA							
Diamonds with running area	80' x 80'		6,400	12,800	25,600	25,600	25,600
Digging and garden area			800	800	800	800	800
Sandbox	8' x 20'	16' x 28'	448	448	448	896	896
Area for shade and circulation			10,000	8,850	8,850	13,275	17,700
Total turf and dirt area			17,648	22,898	35,698	40,571	44,996
TOTAL AREA FOR GRADES 1-2-3 (square feet)				31,074	47,734	56,035	67,580
(acres)				.7	1.1	1.3	1.6

*Superimposed

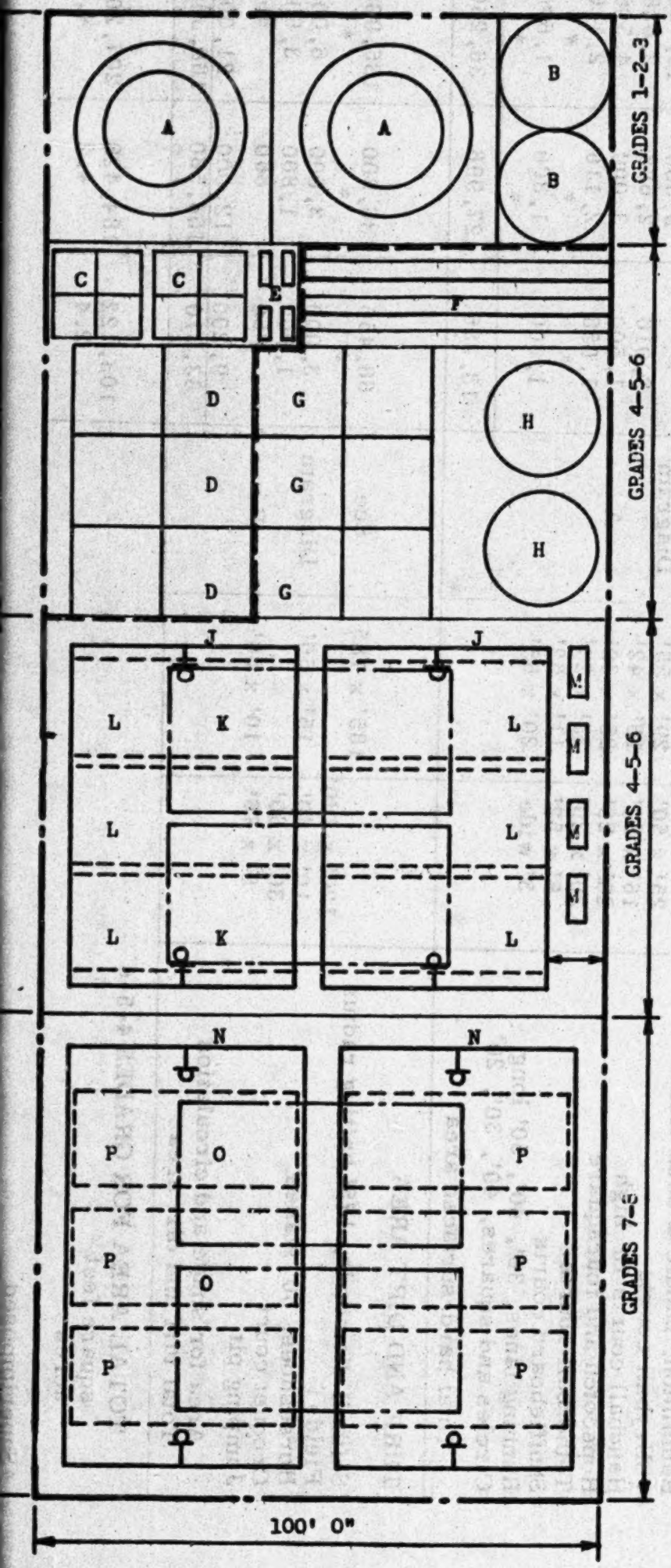
Outdoor Facilities for Physical Education for Grades Four, Five, and Six

Area and use	Dimensions of facility	Area needed for safe use	Total number of square feet needed for school of				
			Less than 100 pupils total	Less than 100 pupils in gr. 4-5-6	Up to 145 pupils in gr. 4-5-6	Up to 240 pupils in gr. 4-5-6	Up to 315 pupils in gr. 4-5-6
APPARATUS							
To be installed over rubber matting on hard surface, or sand and pine shavings, or sand and rubber cuttings							
Climbing poles or ropes 12' high	2' x 12'	12' x 20'	240	240	480	480	480
Horizontal bars, 3, at 5', 5-1/2', 6'	2" x 12'	10' x 20'	200	200	200	400	400
Horizontal ladder 6-1/2' high	2' x 14'	6' x 26'	--	156	312	312	312
Monkey rings 7-1/2' high	2' x 15'	10' x 24'	--	240	240	240	240
Sculptured play equipment	12' x 14'	20' x 22'	--	440	440	880	880
Access and circulation				150	200	270	270
Total apparatus area			440	1,426	1,872	2,582	2,582
HARD-SURFACED AREA							
Basketball courts	40' x 60'	46' x 68'	See	12,512	12,512	12,512	12,512
Badminton, paddle & deck tennis	17' x 40'	19' x 44'		*	*	*	*
Volleyball courts	25' x 50'	29' x 55'	Diagram	*	6,380	12,760	12,760
Handball courts 10' high	16' x 32'	16' x 42'		2,016	2,688	2,688	5,376
Hopscotch and foursquare	20' x 20'	25' x 30'	A	1,500	3,000	4,500	6,000
Tetherball courts	20' x 20'	23' x 23'		1,058	2,116	2,116	2,116
Shuffleboard courts	6' x 52'	11' x 62'		*	*	*	*
Running lanes, 30', 40', 50' long	3' wide	20' x 65'		1,300	1,300	1,690	1,690
Circles and squares, 40', 30', 20'				*	*	*	*
Total hard-surfaced area				18,386	27,996	36,266	40,454
TURF AND DIRT AREA							
Softball diamonds, 175' batting radius		185' x 185	See	68,450	136,900	136,900	205,350
Fields	120' x 180'			*	*	*	*
Horseshoes, 30' stakes	10' x 40'	15' x 50'	Diagram	3,000	3,000	6,000	6,000
Croquet court	30' x 60'			1,800	1,800	3,600	3,600
Jumping pit	5' x 76'	10' x 86'	B	860	860	860	860
Area for shade and circulation				9,200	12,000	21,000	21,000
Total turf and dirt area				83,310	154,560	168,360	236,810
TOTAL AREA FOR GRADES 4-5-6							
square feet				103,122	184,428	207,208	279,846
acres				2.4	4.2	4.8	6.4

*Superimposed

DIAGRAM A

Multiple-use Game Courts for Small Elementary Schools (300 Pupils or Less)



Grades 1-2-3
Area = 6,586 sq. ft.

A - 2 circle games in 40' squares
B - 2 tetherball circles
C - 2 foursquare games 16' x 16'
D - 3 handball and target areas
E - 4 hopscotch courts

Grades 4-5-6
Area = 4,014 sq. ft.

F - 3 bowling & shuffleboard courts with 6 running lanes superimposed
G - 3 handball courts and target
H - 2 20' tetherball circles and other games

and

Grades 4-5-6
Area = 7,000 sq. ft.

J - 2 basketball courts 40' x 60'
K - 2 volleyball courts 25' x 50'
L - 6 tennis type courts 17' x 40'
M - 4 hopscotch courts

Grades 7-8
Area = 8,500 sq. ft.

N - 2 basketball courts 42' x 74'
O - 2 volleyball courts 25' x 50'
P - 6 tennis type courts 17' x 40'

Total area = 26,100 sq. ft.

Minimum paved area for a school with only one or two rooms and not to exceed a total of 100 pupils:

1. Area 70' x 100' for basketball, hopscotch, and other court games = 7,000 sq. ft.
2. 3 handball and target courts = 2,016 sq. ft.
3. 2 tetherball circles = 1,058 sq. ft.
4. Open area for circle games = 1,600 sq. ft.

Total area = 11,674 sq. ft.

Multiple-use court and separate court areas must be hard surfaced and laid with positive drainage for maximum usefulness.

grades, and these activities require somewhat larger spaces for both court and field games. Although games with the team element are emphasized in these grades, provision for single, couple, and small group games and activities is essential. The skills basic to successful participation in all types of individual and team sports, as well as rhythms and recreational activities, should be acquired during this period of growth and development.

Multiple-use areas in small schools (under 300). Diagrams A and B show the space needed on multiple-use hard-surfaced and turfed areas for schools with a total enrollment of less than 300 pupils. In Diagram A, the hard-surfaced area for grades four, five, and six is located between the area for the children in grades one, two, and three and that for pupils in grades seven and eight. Hard-surfaced areas so arranged can easily be used for both instruction and school recreation by having different age groups scheduled at different times. When the pupils in grades four, five, and six need four basketball courts for instruction or recreation, the older boys and girls should be assigned to the large-sized courts (N).

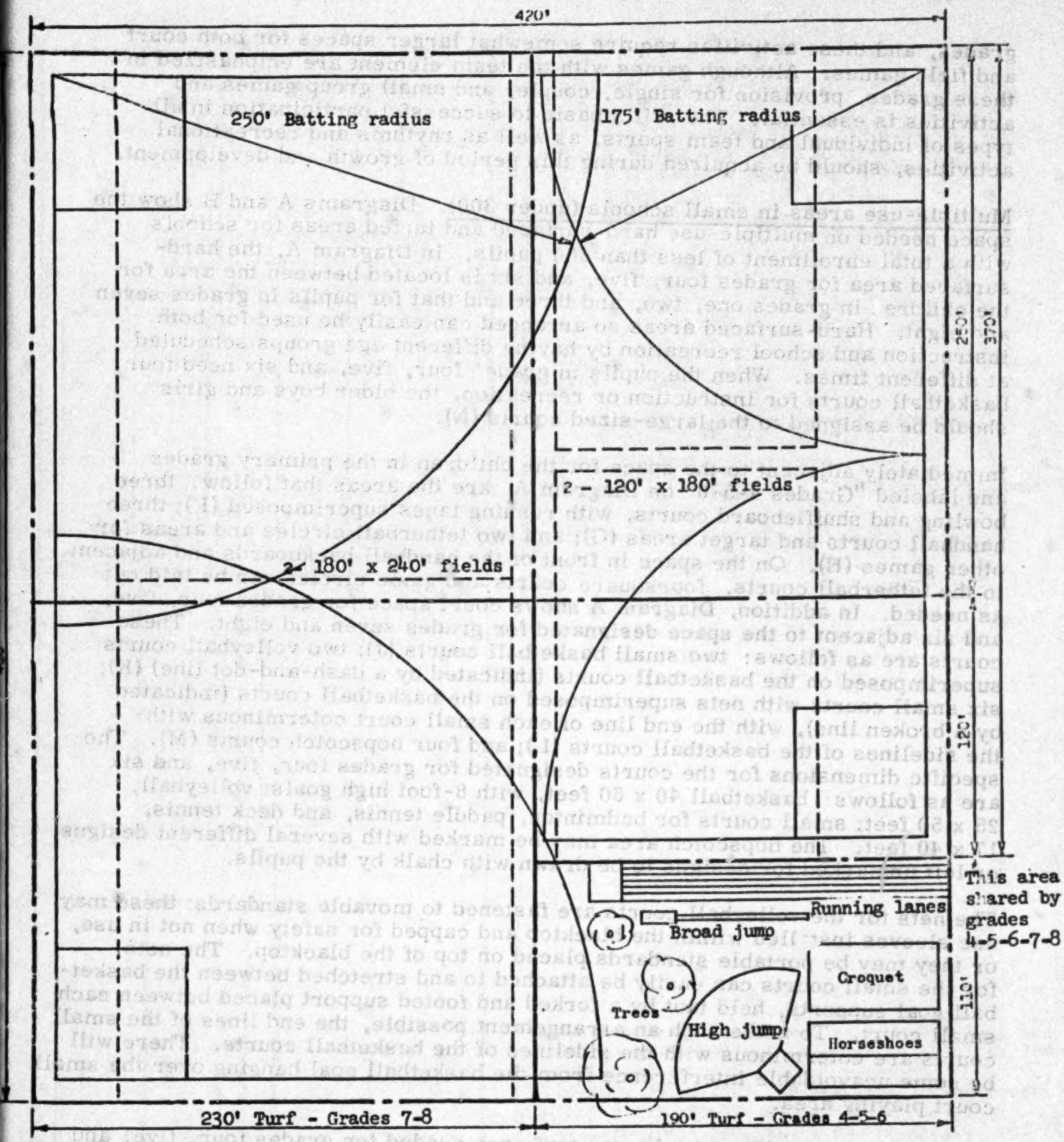
Immediately adjacent to the space for the children in the primary grades and labeled "Grades 4-5-6" on Diagram A are the areas that follow: three bowling and shuffleboard courts, with running lanes superimposed (F); three handball courts and target areas (G); and two tetherball circles and areas for other games (H). On the space in front of the handball backboards and adjacent to the tetherball courts, foursquare courts and game circles can be laid out as needed. In addition, Diagram A shows court space for grades four, five, and six adjacent to the space designated for grades seven and eight. These courts are as follows: two small basketball courts (J); two volleyball courts superimposed on the basketball courts (indicated by a dash-and-dot line) (K); six small courts with nets superimposed on the basketball courts (indicated by a broken line), with the end line of each small court coterminous with the sidelines of the basketball courts (L); and four hopscotch courts (M). The specific dimensions for the courts designated for grades four, five, and six are as follows: basketball 40 x 60 feet, with 8-foot high goals; volleyball, 25 x 50 feet; small courts for badminton, paddle tennis, and deck tennis, 17 x 40 feet. The hopscotch area may be marked with several different designs, or left unmarked for designs to be drawn with chalk by the pupils.

The nets for the volleyball courts are fastened to movable standards; these may use sleeves installed within the blacktop and capped for safety when not in use, or they may be portable standards placed on top of the blacktop. The nets for the small courts can easily be attached to and stretched between the basketball goal supports, held taut by a forked and footed support placed between each small court. To make such an arrangement possible, the end lines of the small courts are coterminous with the sidelines of the basketball courts. There will be some unavoidable interference from the basketball goal hanging over the small court playing area.

Diagram B shows the multiple-use turf area needed for grades four, five, and six in a school with a total enrollment of fewer than 300 pupils. On the turf

DIAGRAM B

Multiple-use Turf Area for Small Schools (300 Pupils or Less)



This unit is designed for up to 100 pupils, grades 7-8.

This unit is designed for up to 100 pupils, grades 4-5-6.

For schools with a total enrollment of fewer than 100 pupils, turfed area 250' x 420' is recommended, plus 17,648 sq. ft. turf and dirt area as in Table 3.

area, 190 x 370 feet, are shown two softball diamonds with a batting radius of 175 feet and with two fields, 120 x 180 feet, superimposed. Two such diamonds and fields are sufficient for a school with fewer than 100 pupils in grades four, five, and six. For 101 to 240 pupils in these grades, four softball diamonds and fields are needed; for 241 to 315 pupils, six diamonds and fields.

Multiple-use areas in schools with less than 100 pupils. For schools with a total enrollment of 100 or less pupils, the minimum field space needed is 250 x 420 feet, plus approximately 17,648 square feet, as shown for children in grades one, two, and three in Table 3 under "Turf and dirt area." The minimum hard-surfaced area is 11,674 square feet, with the following space allocations: 7,000 square feet for basketball, hopscotch, and other court games; 2,016 square feet for three handball courts; 1,058 square feet for two tetherball circles, and 1,600 square feet of open area for circle games.

Grades Seven and Eight

Table 5 shows the separate and specific outdoor facilities needed for physical education for grades seven and eight. Outdoor facilities and space allocations are indicated for schools with a total enrollment of fewer than 100 pupils and with a varying number of pupils in grades seven and eight: (1) below 100; (2) from 101 to 145; (3) from 146 to 315; (4) from 316 to 420; and (5) from 421 to 750. The needs for space are, of course, different for pupils in these grades than for those in lower grades. The courts are bigger, the fields are larger, and facilities for several regulation sports are needed. Certain of the activities by their nature and by the established rules are played by boys and girls separately. Other activities are taught coeducationally. Grades seven and eight may be housed in a school with kindergarten and grades one through six; with grades one through eight; or in a separate building on a separate site. The length of the class period varies from 20 minutes to 50 minutes a day. Facilities may or may not be provided for changing clothes and showering. The teacher may be a regular classroom teacher or may be a physical education specialist.

Multiple-use areas in small schools (under 300). Diagrams A and B illustrate the needs for hard-surfaced and turf areas for schools with a total enrollment of 300 pupils or less. On Diagram A, labeled "Grades 7-8," is shown a hard-surfaced area 85 x 100 feet, on which are marked two basketball courts (N) with two volleyball courts (O) superimposed, and six small courts for games such as deck tennis, badminton, aerial tennis dart, and paddle tennis (P) also superimposed. The adjoining handball courts designed for grades four, five, and six (G) and for grades one, two, and three (D) will also be needed for instruction of pupils in grades seven and eight in handball and paddle ball. Since these handball courts will accommodate only 24 pupils at a time, some pupils may be assigned to use the small courts (L) or (P) for instruction in strokes basic to tennis. Instruction in tennis for pupils in small schools will

TABLE 5

Outdoor Facilities for Physical Education for Grades Seven and Eight

Area and use	Dimensions of facility	Area needed for safe use		Total number of square feet needed for schools of				
			Less than 100 pupils total	Less than 100 pupils in gr. 7-8	Up to 145 pupils in gr. 7-8	Up to 315 pupils in gr. 7-8	Up to 420 pupils in gr. 7-8	Up to 750 pupils in gr. 7-8
APPARATUS								
To be installed over rubber matting on hard surface, or sand and pine shavings, or sand and rubber cuttings								
Climbing poles or ropes 12' high	2' x 12'	12' x 20'	Use	240	240	240	240	240
Horizontal bars, 5-1/2' x 6' high	2" x 12'	10 x 20'		200	200	400	800	800
Parallel bars	1-1/2' x 10'	12' x 24'	Grades	--	288	288	288	576
Set stationary travel rings	10' x 10'	12' x 24'		--	--	288	288	288
			4-5-6					
Access and circulation				150	150	350	350	350
Total apparatus area				590	878	1,566	1,966	2,254
HARD-SURFACED AREA								
Basketball courts	42' x 74'	44' x 78'	See	13,728	13,728	13,728	13,728	27,456
Badminton, paddle and deck tennis courts	17' x 40'	19' x 44'	Diagram	*	*	*	*	*
Volleyball courts	25' x 50'	29' x 55'		*	*	*	*	*
Tennis courts	36' x 78'	44' x 116'	A	**	20,416	30,624	30,624	30,624
Handball courts 12' high	16' x 32'	16' x 44'		***	2,816	6,336	6,336	6,336
Shuffleboard courts	6' x 52'	11' x 62'		****	*	*	*	*
Tetherball courts	20' x 20'	23' x 23'		****	1,058	2,116	3,174	4,232
Total hard-surfaced area				13,728	38,018	52,804	53,862	68,648
TURF AND DIRT AREA								
Softball diamonds, 250' batting radius		260' x 260'	See	135,200	270,400	270,400	405,600	540,800
Fields	180' x 240'	180' x 240'		*	*	*	*	*
Horseshoes 30' & 40' stakes	10' x 50'	15' x 60'	Diagram	****	3,600	7,200	7,200	7,200
Croquet courts	30' x 60'			****	1,800	3,600	3,600	3,600
Track 150 yards	20' x 450'		B	****	*	9,000	9,000	9,000
Jumping pits & runway	8' x 100'	10' x 110'		1,100	1,100	1,100	1,100	1,100
High jump area	77' x 54'			4,158	4,158	4,158	4,158	4,158
Shaded area, tables and benches				9,200	10,000	10,000	10,000	21,000
Total turf and dirt area				149,658	291,058	305,458	440,658	586,858
TOTAL AREA FOR GRADES 7 and 8								
square feet				163,976	329,954	359,828	496,486	657,760
acres				3.8	7.6	8.3	11.4	15.1

*Superimposed **Use paddle tennis ***Use grades 1-6 ****Use grades 4-5-6

be limited to the basic tennis strokes acquired through playing paddle tennis on courts (L) and (P) and in handball and paddle ball on courts (D) and (G). The small courts can be used also for instruction in a variety of games: paddle tennis, deck tennis, doubles volleyball, volley tennis, aerial tennis dart, and badminton.

Multiple-use courts for tennis instruction. Multiple-use courts on which tennis, handball, basketball, volleyball, tennis-type games, and badminton-type games can be played are illustrated in Diagram C and Diagram D. Each layout for a multiple-use court is planned on the basic premise that pupils in grades seven and eight in elementary schools with total enrollments over 100 must have facilities for instruction in tennis on tennis courts. Diagram C illustrates the minimum multiple-use courts for schools with total enrollments from 101 to 300 or for schools housing grades seven and eight separately, with an enrollment not over 140. The combination of four tennis courts (F) and four handball courts (A) provides the teaching station for a classroom of 32 pupils. During instruction in tennis, the only unused hard-surfaced area is in the combination tetherball and shuffleboard courts, which could accommodate 20 pupils. Another class scheduled simultaneously would have to use the turfed area. The apparatus and recreational game areas are small and may or may not accommodate a full class. On the other hand, while one class is occupying the four basketball courts (E) or four volleyball courts (G), another class could receive instruction in tennis-type games on the small courts (D) and on the handball courts (A).

Diagram D is similar to Diagram C, except that it provides extra space for a larger school, with over 300 pupils, or with over 140 pupils in grades seven and eight housed separately. The increased and adjacent hard-surfaced area provides two additional tennis courts, making a total of six tennis courts, and five additional handball courts, making a total of nine handball courts. The teaching station for tennis is a combination of six tennis courts and nine handball courts for schools with a total enrollment over 300. Schools housing only grades seven and eight, with an enrollment over 140, should have the facilities shown in Diagram D. It is possible that a newly opened school with a small enrollment could use the court space shown by Diagram C only; but as the school increases in enrollment, the type and quantity of facilities shown in Diagram D are essential.

The multiple-use courts shown in Diagrams C and D are planned to provide instruction in a variety of appropriate skills on a minimum-sized hard-surfaced area requiring a minimum of maintenance. The tennis nets need not be removed; the basketball standards are stationary and do not obstruct play on the superimposed courts. Movable standards are needed for the small courts (E). The fence and an extension of the post supporting the tennis nets can give adequate support for the nets in the volleyball courts (G) which are superimposed on the basketball courts (E) in Diagram C. Movable standards can be set into sleeves in the hard-surfaced area or, if weighted, placed on top of the surface.

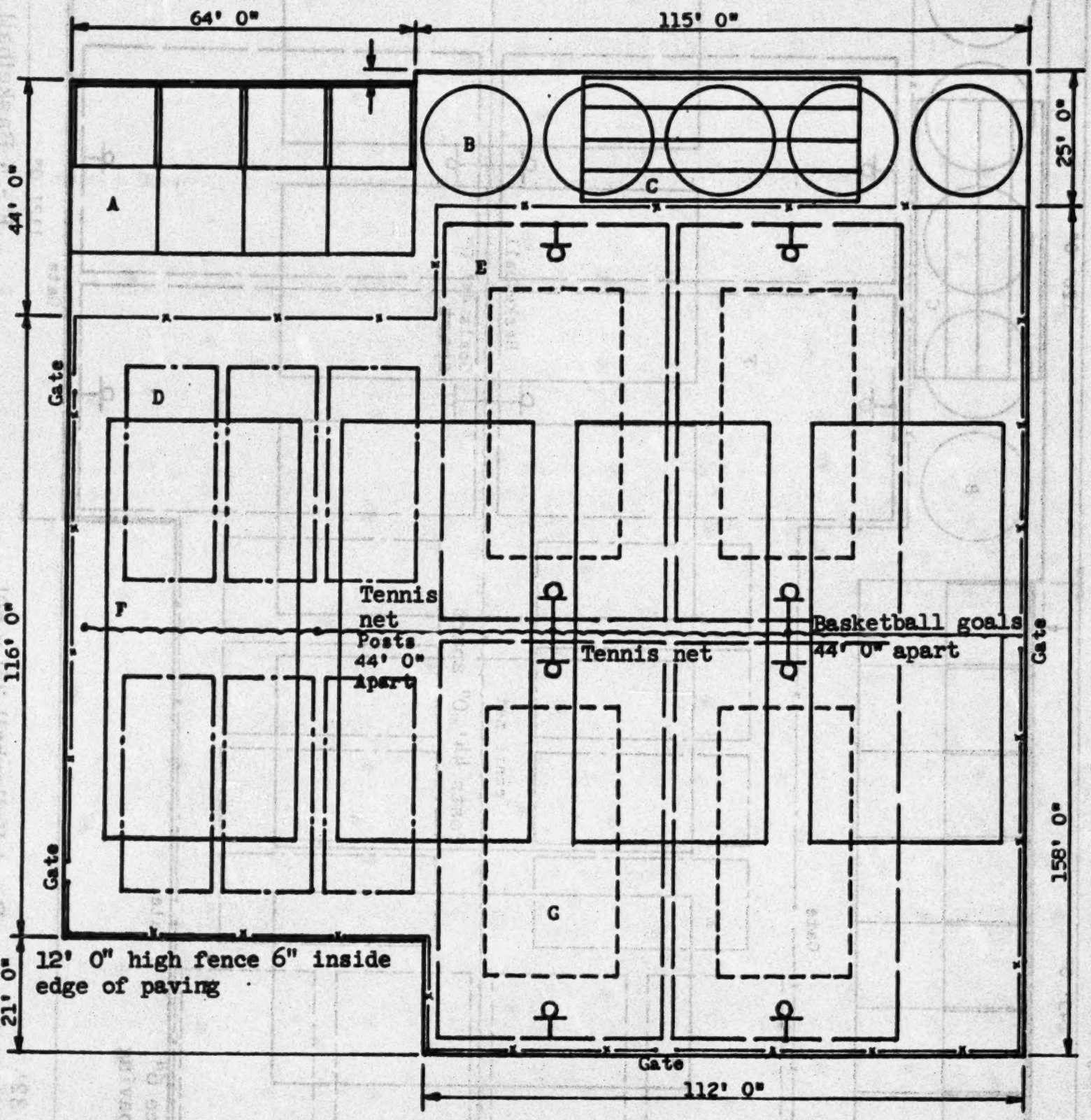
Multiple-use turf area for small schools (under 300). Diagram B shows the turfed area needed for schools with enrollments of fewer than 300 pupils. Illustrated in a space 230 x 480 feet are two softball diamonds with a 250-foot batting radius, with two fields, 180 x 240 feet, superimposed. Such a field space is a minimum requirement for 100 or fewer pupils in grades seven and eight. The turf and dirt areas for different enrollments are shown in Table 5. Four diamonds and fields, laid out in an area of 270,400 square feet, are necessary for 101 to 315 pupils; six diamonds and fields, in an area of 405,600 square feet, for 316 to 420 pupils; eight fields and diamonds, in an area of 540,800 square feet, for 421 to 750 pupils.

Multiple-use courts and turfed area for schools of fewer than 100 pupils. Minimum hard-surfaced areas needed for grade seven and eight in a school with total enrollment of 100 or fewer pupils is noted on Diagram A. In these minimum facilities, grade seven and eight pupils must use the small 40 x 60 foot basketball court instead of a 42 x 74 foot court. Instruction in tennis is restricted to basic strokes acquired through playing handball, paddle ball, and paddle tennis.

For schools of fewer than 100 pupils in grades one through eight, a turfed area of 250 x 420 feet is needed, plus 17,648 square feet of turf and dirt area, as shown in Table 3.

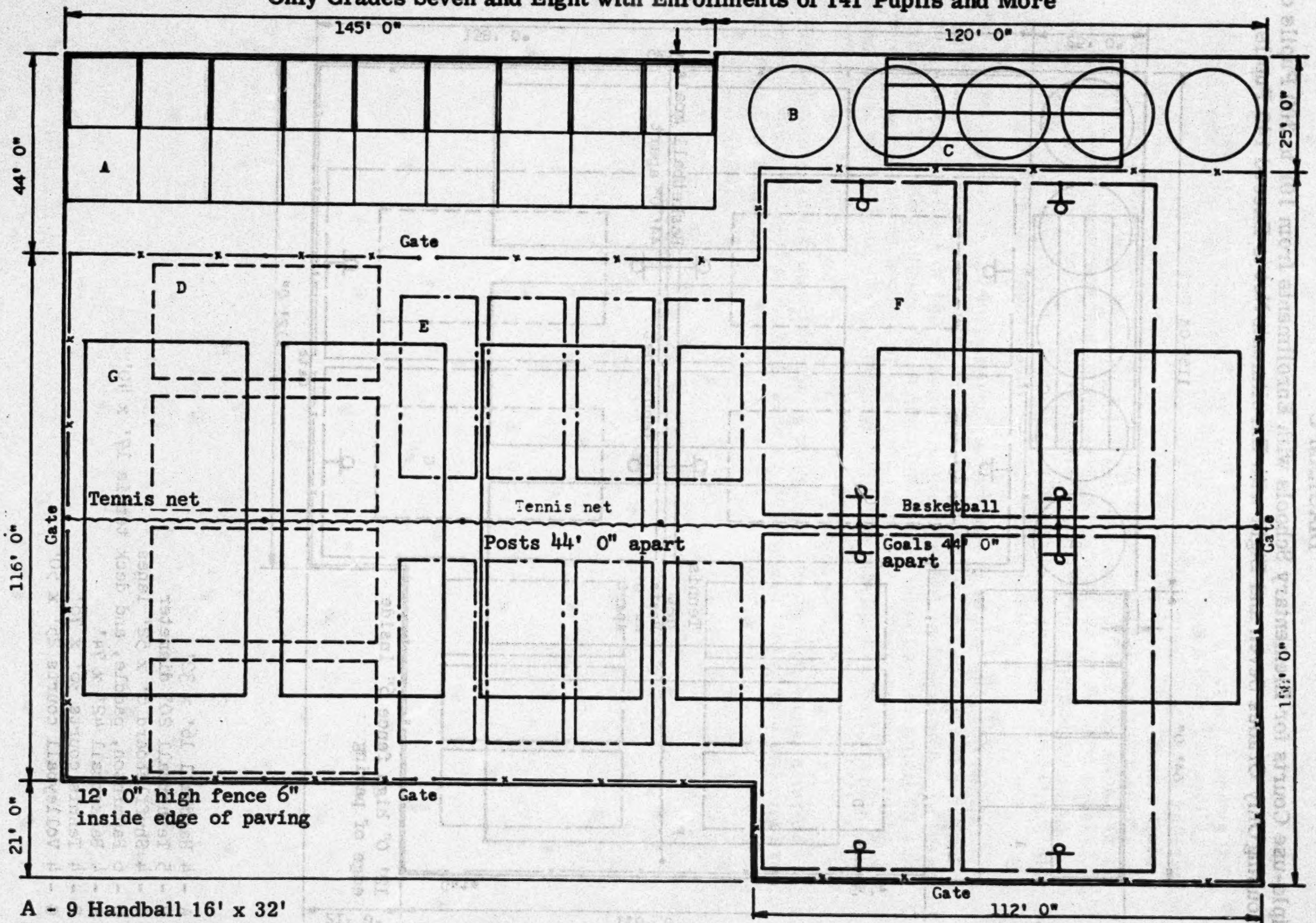
DIAGRAM C

Multiple-use Courts for Elementary Schools with Enrollments from 101 to 300 Pupils or Housing Only Grades Seven and Eight with Enrollments Not to Exceed 140 Pupils



A - 4 Handball 16' x 32'
B - 5 Tetherball 20' diameter
C - 4 Shuffleboard 6' x 52' lanes
D - 6 Badminton, paddle, and deck tennis 17' x 40'
E - 4 Basketball 42' x 74'
F - 4 Tennis courts 36' x 78'
G - 4 Volleyball courts 25' x 50'

Multiple-use Courts for Elementary Schools with Enrollments over 300 or Housing Only Grades Seven and Eight with Enrollments of 141 Pupils and More



A - 9 Handball 16' x 32'
B - 5 Tetherball 20' diameter
C - 4 Shuffleboard 6' x 52' lanes
D - 4 Volleyball 25' x 50'
E - 8 Badminton, paddle, & deck tennis 17' x 40'
F - 4 Basketball 42' x 74'
G - 6 Tennis courts 36' x 78'

SUMMARY OF SPACE REQUIREMENTS

Chart II provides a quick estimation of the size of each type of area needed for a particular size and type of school. It should be noted that the scales for the three types of area are different: the apparatus area is charted on a 1,000-foot scale; the hard-surfaced area on a 10,000-foot scale; and the turf, dirt, and shaded area on a 100,000-foot scale. Reading from the left, the first four columns show the needs for space in a small school (A) up to four classrooms, with a total enrollment of 100 or fewer pupils. Both A and B represent schools with a total enrollment of fewer than 300 pupils. The minimum courts and turfed areas needed are shown in Diagrams A and B. The kindergarten rooms (C) should be separate from other buildings and have separate play areas (outdoor classrooms). In large schools (D), the space needed for the number of children in a specified number of classrooms in grades one, two, and three is shown. Needs for grades four, five, and six are shown in (E). The needs for outdoor facilities are the same for the children in these grades whether or not they are housed with kindergarten and grades one through six or with kindergarten and grades one through eight.

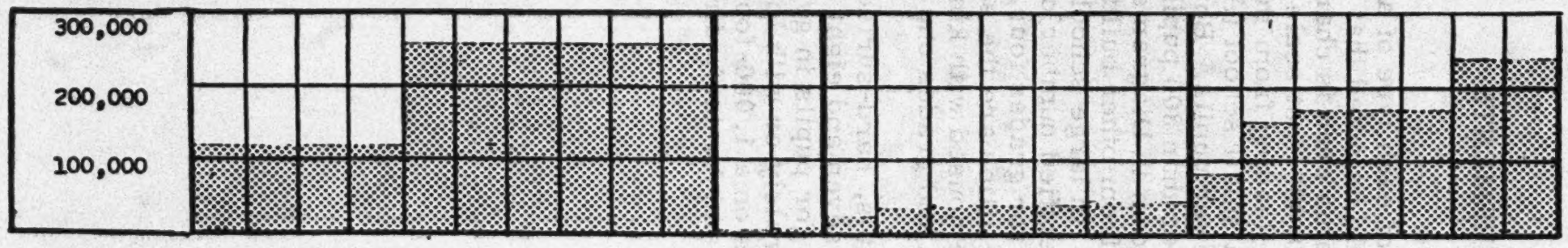
A quick estimate of the space needed for apparatus, hard-surfaced area, and the turf, dirt, and shaded areas for grades seven and eight are shown on Chart III. The needs are the same generally for pupils in grades seven and eight whether these grades are housed separately or with lower grades. Chart III shows the space required for apparatus on a 1,000-foot scale, for hard-surfaced area on a 10,000-foot scale, and for turf, dirt, and shaded areas on a 100,000-foot scale.

Space for Each Type of Play Area: (1) Apparatus; (2) Hard-surfaced; and (3) Turf, Dirt, and Shaded, for Grade Levels in Schools of Varying Sizes

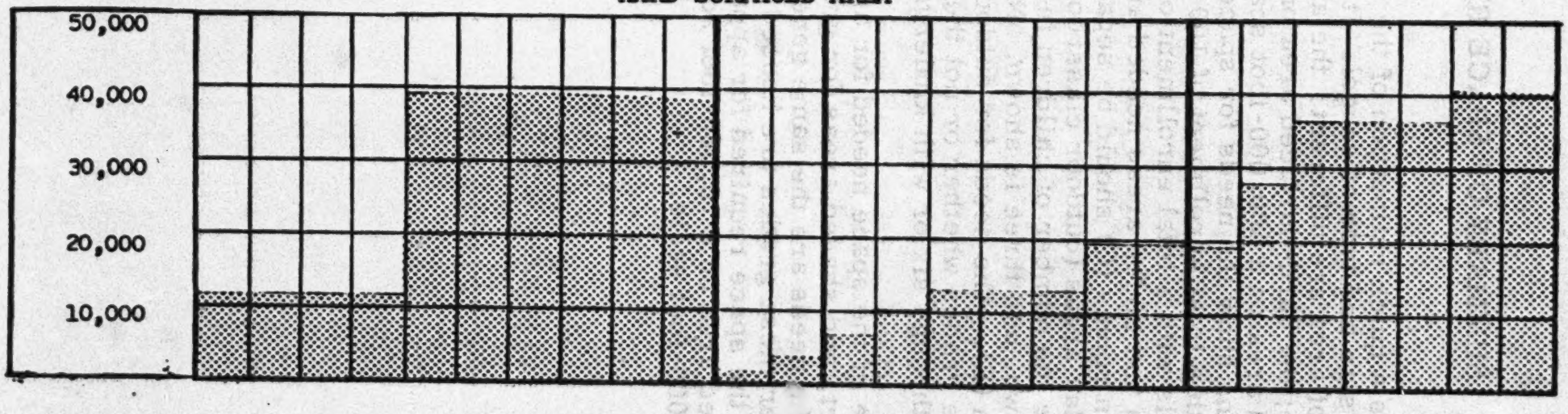
School	A–SMALL SCHOOL				B–GRADES 1–6 OR 1–8						C–KGTN.		D–LARGE SCHOOL, GRADES 1–3							E–LARGE SCHOOL, GRADES 4–6						
Number of Pupils	6 25	26 50	51 75	76 99	100 133	134 166	167 199	200 237	238 265	266 299	15 55	55 110	up to 100	100 140	141 175	210	245	280	315	up to 100	100 140	141 175	210	245	280	315
Number of Classrooms	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	3	4	5	6	7	8	9

Square Feet

APPARATUS



HARD-SURFACED AREA



TURF, DIRT, AND SHADED AREA

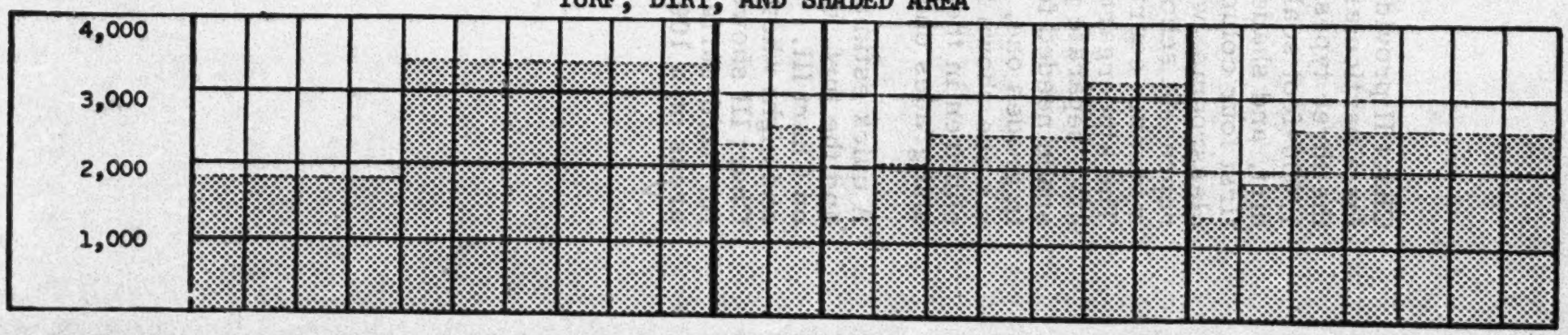
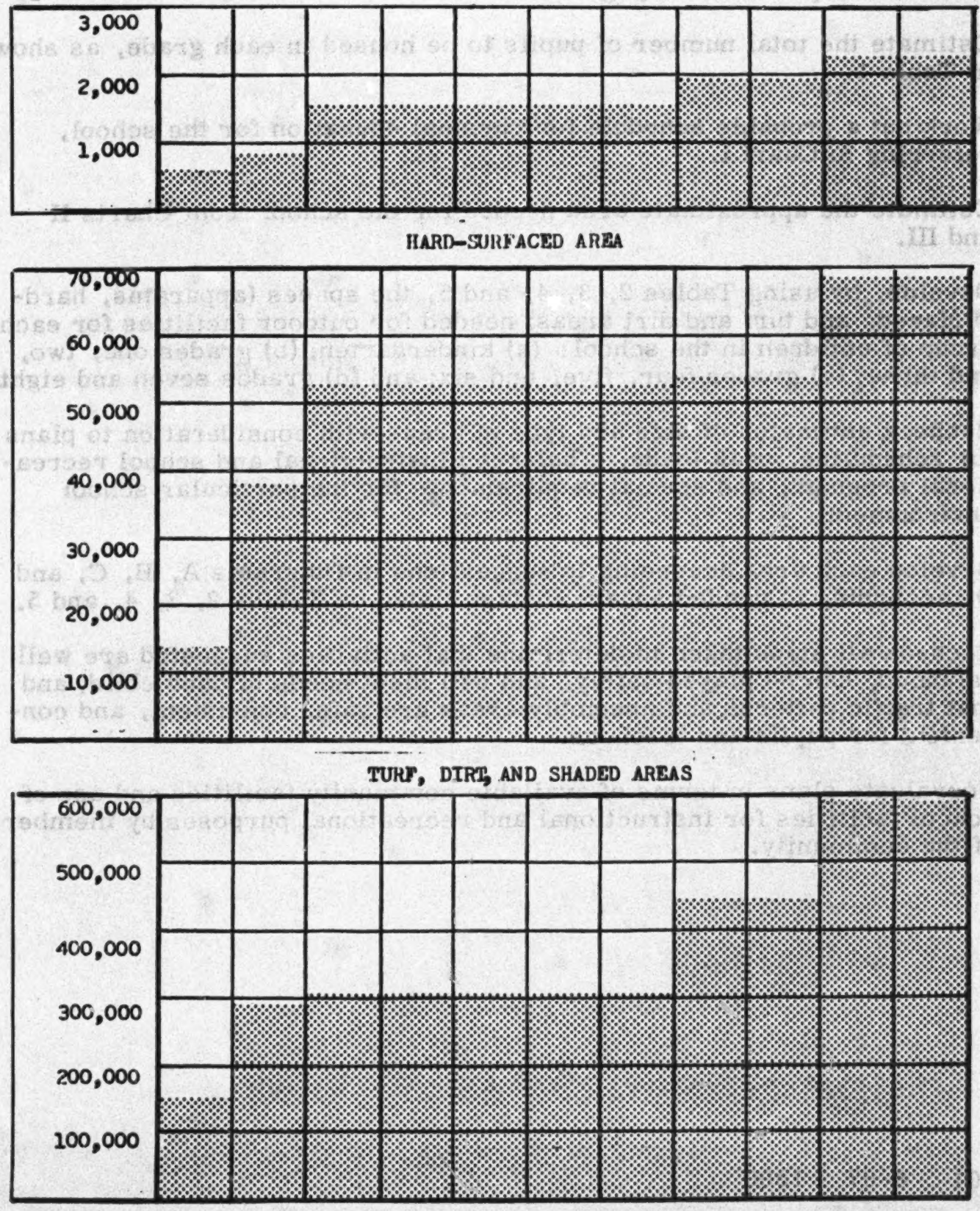


CHART III

Space for Each Type of Play Area: (1) Apparatus; (2) Hard-surfaced; and (3) Turf, Dirt, and Shaded, for Schools of Varying Size Housing Only Grades Seven and Eight

Number of pupils	Up to 100	101 to 140	141 to 175	176 to 210	211 to 245	246 to 280	281 to 315	316 to 350	351 to 420	421 to 630	631 to 750
Number of classrooms	3	4	5	6	7	8	9	10	12	18	22



STEPS IN PLANNING

To make the best use of the recommendations contained in this bulletin, the site planner should take the following steps:

1. **Answer the questions on page 3.**

2. **Estimate the total number of pupils to be housed in each grade, as shown in Table 1.**

3. **Work out a probable schedule for physical education for the school, referring to Chart I.**

4. **Estimate the approximate area needed for the school from Charts II and III.**

5. **Develop, by using Tables 2, 3, 4, and 5, the spaces (apparatus, hard-surfaced, and turf and dirt areas) needed for outdoor facilities for each group of children in the school: (a) kindergarten; (b) grades one, two, and three; (c) grades four, five, and six; and (d) grades seven and eight.**

6. **Recheck estimates of size and type of areas with consideration to plans for scheduling, peak loads, a balanced instructional and school recreational program, and special requirements for the particular school environment.**

7. **Develop each area according to suggestions in Diagrams A, B, C, and D, according to needed square footage listed on Tables 2, 3, 4, and 5.**

8. **Recheck all steps taken to determine that activities suggested are well balanced, can be played safely, and will meet needs of each child; and that traffic patterns and assembly areas are safe, consistent, and convenient for pupils and teachers.**

9. **Reevaluate plans in terms of available community facilities and use of school facilities for instructional and recreational purposes by members of the community.**

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